

**REMARKS**

Claims 1-8 stand rejected, with claims 9-22 objected to in the outstanding Official Action. Claims 1, 9, 10 and 12-22 have been amended and newly written claim 23 offered for consideration. Therefore claims 1-23 remain in this application.

Attached hereto is a marked-up version of the changes made to the specification and claim(s) by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

The Examiner's acknowledgment of applicant's claim for foreign priority and receipt of the priority document is very much appreciated. Additionally, the Examiner's consideration of the prior art submitted with applicant's Information Disclosure Statement is also appreciated.

Claims 9-22 stand objected to under 37 CFR 1.75(c) as being in improper multiple dependent form. By the above amendment, the dependency of claims 9-22 has been corrected in the manner suggested by the Examiner, i.e. no multiple claims dependent from multiple dependent claims, thereby obviating any future objection.

Additionally, the Examiner has objected to the arrangement of the specification (paragraphs 14 and 15 of the Official Action). The Patent Office objects to the arrangement of the specification and the Draftsman object to the drawings. It is also appreciated that the Examiner has brought the arrangement of the specification and the existence of Form PTO-948 to the applicant's attention. It is noted that the objection to the arrangement and this form appear to be an indication that the originally filed

specification and drawings (transmitted from WIPO) do not meet the formality requirements of the U.S. Patent and Trademark Office. The Patent Office is reminded that the U.S. Patent and Trademark Office must comply with all articles of the Patent Cooperation Treaty (PCT) including Article 27. It has been held that:

“if the rule and interpretation of the PTO conflicts with the PCT, it runs afoul of Article 27 of the PCT which provides in part:

- (1) No national law shall require compliance with requirements relating to the form or contents of the international application different from or additional to those which are provided for in this Treaty and the Regulations.”  
Caterpillar Tractor v. Commissioner, 231 USPQ 590, 591 (EDVA 1986).

The Patent Office has referenced this decision in the Official Gazette dated September 9, 1986 (1070 TMOG 5).

As a consequence, the Patent Office (including the Chief Draftsman's Office) may not require specification format changes and/or drawing corrections (including changes in paper size, margins, etc.) as long as the originally submitted documents comply with the PCT requirements. Inasmuch as this specification and these drawings were forwarded for WIPO, by definition, they meet the PCT requirements (they are not forwarded until they meet PCT requirements.). Therefore, the objection to the specification and the drawings is respectfully traversed and reconsideration thereof is respectfully requested.

Notwithstanding the above, applicant has added headings and subheadings to the specification. Proposed New drawings for Figures 1 & 2 are attached and, upon receipt of the Examiner's approval and a Notice of Allowance, formal drawings will be submitted.

Claims 1-8 stand rejected under 35 USC §102 as being anticipated by Sparks (U.S. Patent 5,427,975). The Examiner specifically alleges that Sparks teaches "partially filling said channel with an infill material (48) at an uppermost region of said channel (column 12, rows 25-29)." This is not believed to be a correct analysis of the Sparks reference, as at the cited portion, Sparks specifically teaches that the cavity 22 is completely filled ("the cavity 22 is filled and the micromachined element 18 is immobilized." Column 12, lines 27-29).

It is noted that applicant's independent original claim 1 specified that the step was "partially filling" the channel with infill material. "Partially filling" does not suggest "completely filling," and therefore applicant's original claim 1 clearly defined over the Sparks reference. However, applicant has amended claim 1 to recite "partially filling and completely covering said channel" which not only clearly distinguishes over the Sparks reference, but also covers applicant's disclosed Figure 3 embodiment in which the channels are not completely filled (they are "partially" or "incompletely filled").

However, applicant includes newly written claim 23 directed to "at least partially filling said channel" which can include a completely filled channel which the Examiner may argue is disclosed in Sparks. However, there is another feature recited in applicant's claims 1 and 23 which is not present in the Sparks reference. Both the original and newly written independent claims specify the pattern and etching step "to form a hole through the infill material" (emphasis added).

In Sparks, as noted by the Examiner, the infill material is item 48 ("partially filling said channel with an infill material (48)" Official Action, section 4, line 3). A review of

Sparks, and in particular Figures 9a-9d, fails to show any hole being made through "infill material (48)." As a result of this claim language, neither existing independent claim 1 nor newly written claim 23 can be anticipated by or obvious in view of the Sparks reference. Reconsideration of the rejection of claim 1 and claims 2-22 dependent thereon, as well as newly written claim 23, in view of the Sparks reference is respectfully requested.

Claims 7 and 8 stand rejected under 35 USC §112 (second paragraph) as being indefinite. Claim 1 has been amended to recite that the channel is provided in a "substrate comprising a second material . . . ." This then provides sufficient antecedent basis for "the substrate" as referred to in claims 7 and 8, thereby obviating any further objection thereto.

The Examiner has also objected to the specification as noted above in section 15 of the Official Action and headings and subheadings have been added to the specification. Accordingly, any further objection thereto is respectfully traversed.

In section 16 of the Official Action, Figures 1 and 2 of the drawings are objected to because they are "illegible." Again, because these drawings have been approved by WIPO, they should be considered acceptable by the U.S. Patent and Trademark Office. Applicant encloses proposed corrected drawings. Upon receipt of the Examiner's approval and a Notice of Allowance, formal drawings will be submitted.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1-23 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a

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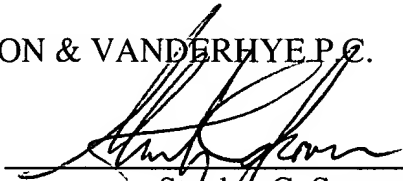
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brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact applicant's undersigned representative.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION**

Page 1, between the title and first paragraph:

**BACKGROUND OF THE INVENTION**

**1. Field of the Invention**

Page 1, above the paragraph beginning at line 5:

**2. Discussion of Prior Art**

Page 1, above the paragraph beginning at line 16:

**SUMMARY OF THE INVENTION**

Page 13, above the paragraph beginning at line 28:

**BRIEF DESCRIPTION OF THE DRAWINGS**

Page 14, above the paragraph beginning at line 18:

**DETAILED DISCUSSION OF EMBODIMENTS**

**IN THE CLAIMS**

1. (*Amended*) A micro-machining method of bridging a channel with at least one bridging material, the channel being provided in a substrate comprising a second material and the method comprising the steps of:

d) partially filling and completely covering said channel with an infill material at an uppermost region of said channel;

e) patterning and etching said infill material to form a hole through the infill material to the second material; and

f) depositing the at least one bridging material on to said infill material so that at least one portion of the at least one bridging material contacts the second material through the hole.

9. (*Amended*) A method according to [any one of the preceding claims] claim 1 comprising depositing a conductive material as the at least one bridging material.

10. (*Amended*) A method according to [any preceding] claim 1 wherein a plurality of bridging materials are used to bridge the channel.

12. (*Amended*) A method according to [any preceding] claim 1 which comprises depositing the infill material using Plasma Enhanced Chemical Vapour Deposition (PECVD).

13. (*Amended*) A method according to [any preceding] claim 1 which comprises depositing one of the following materials as the infill layer: an oxide, a nitride, an oxynitride, polysilicon.

14. (*Amended*) A method according to [any preceding] claim 1 which comprises using a dual frequency PECVD system to deposit the infill material wherein the plasma is generated at a first frequency and species accelerated toward the second material at a second frequency.

15. (*Amended*) A method according to [any one of the preceding claims] claim 1 which causes the infill material to expand laterally across the channel

16. (*Amended*) A method according to [any one of the preceding claims] claim 1 comprising causing the deposited material to cap the channel sealing the channel at the top region.

17. (*Amended*) A method according to [any claim directly or indirectly dependent on] claim 2 which comprises using an etching process to remove the infill material.

18. (*Amended*) A method according to [any one of claims 1 to 11] claim 4 which comprises using any one of the following for the infill material: a polymer material, a polyimide, a photoresist, PIQ<sup>TM</sup>, spin on glass, or other spin on di-electric.

19. (*Amended*) A method according to claim 18 [as it depends directly or indirectly upon claim 4] which comprises flowing the infill material so that it flows into the channel.

20. (*Amended*) A method according to claim 18 [or 19] which comprises using a dry etching process to remove the infill material.



21. (*Amended*) A method according to [any one of claims 1 to 11] claim 1 which comprises using a photoresist as the infill material and further comprises using a mask to develop the photoresist and then etching the mask to remove portions of photoresist.

22. (*Amended*) A method according to [any one of claims 1 to 11] claim 1 which comprises using a polyimide as the infill material and subsequently applying a photoresist on top of the infill material to allow the infill material to be patterned and etched.

--23. (*New*) A micro-machining method of bridging a channel with at least one bridging material, the channel being provided in a substrate comprising a second material and the method comprising the steps of:

c) at least partially filling said channel with an infill material at an uppermost region of said channel;

d) patterning and etching said infill material to form a hole through the infill material to the second material; and

depositing the at least one bridging material on to said infill material so that at least one portion of the at least one bridging material contacts the second material through the hole.--